RESOLUTION NO. 2019-52

A RESOLUTION OF THE VILLAGE COUNCIL OF THE VILLAGE OF KEY BISCAYNE, FLORIDA, AUTHORIZING THE VILLAGE MANAGER TO ISSUE A WORK ORDER TO EAC CONSULTING, INC. FOR ENGINEERING, SURVEYING, AND MARINE BIOLOGICAL SERVICES RELATING TO BEACH RENOURISHMENT PROJECTS; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Village of Key Biscayne ("Village") issued Request for Qualifications No. 2016-02-09 ("RFQ") for continuing professional engineering services; and

WHEREAS, pursuant to the RFQ, the Village Council selected EAC Consulting, Inc. ("Consultant") as one of the consultants to provide continuing professional engineering services and authorized the Village Manager to execute an agreement with Consultant; and

WHEREAS, on October 30, 2018, the Village Council approved the issuance of a Work Order to Consultant for engineering, surveying and marine biological services relating to annual monitoring of the Beach Renourishment Projects (the "Projects"); and

WHEREAS, Consultant has provided a proposal, attached as Exhibit "A," (the "Proposal") for additional engineering, surveying and marine biological services relating to the Projects; and

WHEREAS, the Village Council desires to authorize the Village Manager to negotiate and issue a work order for the Projects consistent with the Proposal attached as Exhibit "A" and the professional services agreement entered into between the Village and Consultant; and

WHEREAS, the Village Council finds that this Resolution is in the best interest and welfare of the residents of the Village.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND VILLAGE COUNCIL OF THE VILLAGE OF KEY BISCAYNE, FLORIDA, AS FOLLOWS:

Section 1. **Recitals Adopted.** That each of the above-stated recitals are hereby adopted, confirmed, and incorporated herein.

Section 2. **Authorization.** The Village Manager is hereby authorized to negotiate and issue a work order to Consultant for the Projects consistent with the Proposal attached hereto as Exhibit "A" in an amount not to exceed $74,063.

Section 3. **Effective Date.** That this Resolution shall take effect immediately upon adoption.

PASSED and ADOPTED this 27th day of August, 2019.

MICHAEL W. DAVEY, MAYOR

ATTEST:

JENNIFER MEDINA, CMC
VILLAGE CLERK

APPROVED AS TO FORM AND LEGAL SUFFICIENCY

VILLAGE ATTORNEY

Schedule

The schedule for the Year 2 post-construction biological monitoring/permit compliance is approximately six (6) months, although the regulatory agencies sometimes take up to 1 year to review the submitted reports

Conclusion

We are ready begin working on this assignment. If the above fee proposal and the terms above are acceptable to you, please provide us with a Work Authorization// Work Order and a signed Approval (below). Please feel free to contact me if any clarifications are required. Thank you for the opportunity to be of service to the Village of Key Biscayne.

Sincerely,
EAC Consulting, Inc

Michael Adeife, P.E.
Senior Vice President

cc: File
Jake Ozyman, PE (VKB)
Nicole Mallard (EAC Contracts)
Tim Blankenship, P.E. (Moffat & Nichol)

AGREED AND ACCEPTED

By: _____ _____
Andrea Agha, Village Manager Date

_____, 2019
Notice to Proceed Date

EXHIBIT "A"

EAC Consulting, Inc.

August 2, 2019

Andrea Agha, aagha@keybiscayne.fl.gov
Village Manager
Village of Key Biscayne
88 W. McIntyre St, Suite 210
Key Biscayne, FL 33149

Re: VKB Beach 2017 Re-Nourishment – Year 2 (2019) Post Construction Biological Monitoring Services

Dear Ms. Agha:

EAC Consulting, Inc., as part of its Continuing Services Contract with the Village's respectfully submits these services to perform the following tasks as mandated by the Florida Department of Environmental Protection (FDEP).

These monitoring efforts are required to ensure compliance with issued regulatory permits and conditions.

Background
In 2017, the Village of Key Biscayne completed Beach Nourishment improvements along the VKB Beach coastline. The project location was within the Village of Key Biscayne between FDEP survey control monuments R-102 and R-108, approximately 5,425 feet (1,654 meters) of coastline, with control monitoring site located south of R-110, north of R-100.

A Biological Monitoring Plan (BMP) was prepared in support of the project. The goals of the BMP include delineating the western edge of the nearshore seagrass community offshore of the project area and estimating percent cover and species composition of seagrasses along perpendicular permanent transects within the project area.

The Miami-Dade County Regulatory and Economic Resources (RER), FDEP, and United States Army Corp of Engineers (USACE) permits require biological monitoring in accordance with the approved project specific BMP. The purpose of the monitoring is to identify unanticipated adverse impacts to submerged aquatic resources that result from construction and/or equilibration of the 2017 beach re nourishment project.

Scope of Work
The scope of services will be provided by our team including our sub consultants - *Olin Hydrographic Solutions, Inc* providing water based hydrographic surveys, Moffatt & Nichol providing coastal engineering services and Smart Sciences, Inc providing the field monitoring. Our scope of services comprises of the following specific tasks and items needed for completing *VKB's Beach 2017 Re-Nourishment – Year 2 (2019) Post Construction Physical Monitoring Services.*

The tasks under this fee proposal are described as follows:

Task 1: Beach Profile Surveying, Base Map/DEP Reporting and Sea Grass Mapping

a) Our team shall perform a hydrographic survey of for each range stations between and including Dade County DNR Monument R-100 and R-113 including the half monuments. This will include a total of 27 Survey Profiles. A topographic survey of the beach will be performed on each of these stations along the recorded azimuth using RTK GPS. The offshore portion of the work will extend out 2000 feet from the monument and will contain at least 20' overlap with the RTK survey on each profile. A survey fathometer will be calibrated for site conditions and used to obtain water depths. Positioning of the survey vessel will be provided using Differential GPS (DGPS). Survey data will be logged, and navigation will be provided using Coastal Oceanographic HYPACK software with an on-board laptop

EXHIBIT "A"

5959 BLUE LAGOON DRIVE · SUITE 410 · MIAMI, FL 33126 · 305.265.5400 eacconsult.com

computer. Tidal Corrections will be managed by incorporating an RTK tides system during the hydrographic survey. Reference datum for the elevations will be NAVD 88.

b) Base Map and DEP Reporting: Our team shall perform the post processing of the hydrographic survey data and convert to a digital terrain map DTM of the subsurface topography for use in future volume calculations. The water depths will be aligned in an AutoCAD drawing with any electronic land survey or rectified aerial photograph. The data will be tabulated, and a survey report generated which conforms to the DEP Bureau of Beaches and Coastal Systems (BBCS) Statewide Coastal Monitoring Program, Regional Data Collection and Processing Plan, dated March 2001.

c) Sea Grass Mapping: Our team shall survey the extents of the seagrass for this project utilizing a Trimble RTK-GPS to position the sea-grass limits.

Task 2: Year 2 Biological Monitoring Survey

*Please refer to scope of work described by our subconsultants (**Smart Sciences, Inc and Moffatt & Nichol, Inc**) in Attachment 1 of this proposal.*

In general, our team shall conduct a biological monitoring survey to delineate the approximate western extent of seagrass and a qualitative survey for seagrass in accordance with the BMP for Village of Key Biscayne Beach Nourishment Project revised May 15, 2018. The survey limits are from FDEP survey control monuments R-102 through R-108 with control areas south of R-110 and north of R-100 and shall follow the methodology for marine benthic surveying based on the National Marine Fisheries Service (NMFS) Recommendations for Sampling *Halophila Johnsonii* at a Project Site (NMFS, 2002), using the "large area" protocol and consistent with past survey methods using the Braun Blanquet (BB) technique.

The western seagrass edge mapping shall occur adjacent to the re-nourishment area between FDEP survey control monuments R-102 and R-108. Approximately 5,425 feet (1,654 meters) of shoreline shall be surveyed to locate the western extent of the submerged aquatic vegetation (SAV). The western edge shall be delineated and recorded using Differential Global Positioning System (DGPS) for analysis and mapping purposes.

Snorkeling and SCUBA will be utilized for all transects and shoreline delineation. Tidal conditions may influence the pace and rate of speed at which the effort can be accomplished. Should adverse conditions be encountered, additional time may be required. This would be necessary if extreme tides, Village events, marine/pedestrian traffic, and/or poor visibility are encountered, which would make surveying this area dangerous and pose a safety risk to staff. ***Please note that Additional time if required to survey these areas will incur additional fees.***

This task also includes planning, coordination, and mobilization activities for field surveys, as well as safety briefings.

Task 3: Year 2 Monitoring Survey Reports

Our team shall prepare comprehensive Post-Construction Biological and Physical Monitoring Survey Reports to document results of Tasks 1 and 2 described previously. The reports will be submitted to FDEP, USACE and RER after the completion of the field surveys. The reports will be presented in hardcopy and electronic format. In addition, all collected raw data (Excel, field data sheets in PDF, etc.) will need to be provided to FDEP, USACE, and RER electronically so that it can be used for internal evaluations.

These reports shall be submitted in electronic format to the Village for review after the completion of fieldwork. The electronic file shall also include the Excel and raw field data sheets in PDF.

Task 4: Year 2 Meetings with VKB and/or Regulatory Agencies

Our team shall participate in conference calls and meetings as requested by the Village and/or regulatory agencies to review monitoring results and to address questions or concerns. Approximately eighteen (18) consulting hours are budgeted for this effort. If additional meetings are required, these will be provided under an addendum scope/budget with Client authorization.

EXHIBIT "A"

Assumptions

1. Beach maintenance access will be provided.
2. GPS data will be collected using Florida State Plane East (US Feet) projection and datum of NAD 83.
3. GPS collected data will have a minimum accuracy of ten (10) feet when differentially corrected.
4. If necessary, our team will request as an additional service a variance to conduct the surveys outside of the June 1 through September 30 USACE guidelines. Approval of request for variance not guaranteed.
5. Changes to the scope due to unforeseen circumstances and additional regulatory requirements shall result in additional fees.

Additional Services

Services not included in this scope include, but are not limited to the following:

1. Addressing additional data collection/analysis requested by the regulatory agencies
2. Addressing any remedial mitigation services or coordination of subsequent monitoring events
3. Additional Meetings unaccounted for in this scope of work.
4. Services to request regulatory variance to conduct surveys and monitoring activities outside of the June – September USACE guidelines
5. Additional time required to complete surveys and monitoring due to inclement weather, extreme tides, Village events, marine/pedestrian traffic, and/or poor visibility condition.

Contract Terms

It is our understanding the statement of work will be undertaken under a work order to be issued subject to the terms and conditions of the professional services agreement, dated May 20th, 2016 entered between the Village and EAC Consulting, Inc.

This scope of services is valid to be executed for sixty (60) days. While we make every effort to keep our fees within estimates quoted, additional costs may be incurred due to circumstances beyond our immediate control, including but not limited to, rule or procedural changes, project team or agency staff delays, and unforeseen circumstances.

EXHIBIT "A"

Compensation

Compensation for the varying tasks is on a lump sum or hourly basis that is based on the following breakdown and will be invoiced on a percentage basis for lump sum tasks and hours expended for hourly tasks in accordance with the level or progress of completion at the time of billing.

Task No.	Description	Basis	Fee
1	Beach Profile Surveying, Base Map/DEP Reporting and Sea Grass Mapping	Lump Sum	$23,450.00
2	Year 2 - Post Construction Biological Monitoring	Lump Sum	$ 24,728.00
3	Year 2 - Post Construction Biological Monitoring Reports	Lump Sum	$ 22,500.00
4	Year 2 - Post Construction Biological Monitoring Meetings with VKB and/or Regulatory Agencies	Hourly	$ 3,185.00
	Printing and Reimbursable(s):	Lump Sum	$ 200.00
	Total Compensation for this Work Order:		**$ 74,063.00**

Attachment No. 1

EXHIBIT "A"

moffatt & nichol

2937 SW 27th Ave, Suite 101A
Miami, FL 33133

(305) 230-1924

July 1, 2019

Mr. Mike Adeife
EAC Consulting, Inc.
815 Northwest 57th Avenue, Suite 402
Miami, FL 33126

Via email: madeife@eacconsult.com

RE: Consulting Services relative to the Village of Key Biscayne Continuing Professional Services Project, Key Biscayne, Florida

Dear Mr. Adeife:

Year 2 post-construction biological monitoring and environmental permit compliance administration services are required relative to the 2017 Village of Key Biscayne Beach Nourishment Project (Project).

The following work tasks outline the scope of services to be provided by Moffatt & Nichol, Inc. (M&N) for EAC Consulting, Inc. (Client):

Part 1 – Year 2 Post-Construction Monitoring

a. **Year 2 Post-Construction Biological Monitoring:** M&N will coordinate with Smart-Sciences and the county, state and federal regulatory agencies relative to the Year 2 post-construction biological monitoring event to be conducted in July of 2019, as well as associated analysis and reporting. M&N will coordinate with Smart-Sciences and the regulatory agencies relative to data collection methodology and analysis scope based on the updated BMP.

   The Year 2 post-construction biological monitoring scope is based on the BMP, which references the summer 2017 post-construction data to be the baseline data set. If comparison of the summer 2019 Year 2 post-construction data to any additional data set is required by any agency or if additional analysis/discussion with the regulatory agencies is required in relation to a perceived environmental impact, this will be addressed under an addendum scope of services. Approximately thirty-two (32) consulting hours are budgeted for this effort.

b. **Year 2 Post-Construction Physical Monitoring Report:** M&N will prepare an engineering report that will include the pre-construction, immediate post-construction and Year 2 post-construction beach profile data collected by the Project surveying subconsultant in July 2019.

EXHIBIT "A"

The report will summarize and discuss the data, the performance of the beach fill project, and identify erosion and accretion patterns within the monitored area. In addition, the report will include a comparative review of project performance to performance expectations and identification of any adverse impacts attributable to the project. The appendices of the report will include plots of survey profiles and graphical representations of volumetric and shoreline position changes for the monitoring area. The results will be analyzed for patterns, trends, or changes between annual surveys and cumulatively since project construction. The report will be compiled and distributed to the environmental regulatory agencies for permit compliance within 90 days following the monitoring survey.

Deliverable: Physical Monitoring Coastal Engineering Report (signed/sealed by a Florida Professional Engineer)

c. **Year 2 Monitoring Meetings:** M&N will participate in conference calls and meetings as requested by the regulatory agencies or directed by the Village to review the post-construction monitoring process and to address any questions or concerns. Approximately ten (10) hours are budgeted for this effort. If additional meetings are required, these will be provided under an addendum scope of services.

Additional Services

Services not included in this scope include, but are not limited to, the following:

1. Addressing additional data collection/analysis requested by the regulatory agencies.
2. Addressing any implied or confirmed compliance issues or unforeseen/extenuating circumstances.

Contract Terms

Refer to contract terms within the Subconsultant Agreement dated January 20, 2017, with EAC Consulting, Inc.

Schedule

The schedule for the Year 2 post-construction biological monitoring/permit compliance consulting services is approximately four (4) months, although the regulatory agencies sometimes take up to 1 year to review the submitted reports.

Compensation

Compensation for the various tasks is on a lump sum or hourly basis pursuant to the following breakdown and will be invoiced on a percent complete or hourly basis in accordance with work completed at the time of billing. Reimbursable expenses will be billed at cost.

EXHIBIT "A"

Item	Description	Fee	Fee Type
1a	Year 2 Post-Con Biological Monitoring	$6,228	Hourly, Est.
1b	Year 2 Post-Con Physical Monitoring Report	$7,500	Lump Sum
1c	Year 2 Monitoring Meetings	$1,985	Hourly, Est.
	Reimbursable Expenses	$200	
	Total Compensation for this Work Order	$15,913.00	

Please contact me with any questions or if you require additional information at tblankenship@moffattnichol.com, or 786-725-4180.

Sincerely,
Moffatt & Nichol

Tim Blankenship, P.E.
Business Unit Leader

TKB:CJB

EXHIBIT "A"

Olin Hydrographic Solutions, Inc.
Consulting Engineering, Surveying & Mapping, and Environmental Services
2900 Calusa St. Coconut Grove, FL 33133
Phone 1 (305) 619 2800; Fax (305) 860 4411

May 16, 2019 P190516A

Michael Adeife, PE., Env sp.
Senior Vice President
EAC Consulting, Inc.
5959 Blue Lagoon Dr, Suite 410
Miami, FL 33126

Dear Sir:

RE: Beach Profiles for Key Biscayne, Florida

Olin Hydrographic Solutions, Inc. (OHS) is pleased to provide this proposal relative to the services for the above-referenced project.

The following parts describe the scope of work to be performed by OHS and also present the terms of agreement between OHS and EAC Consulting, Inc.

Please note fees are inclusive of all mobilization and equipment and OHS staff have performed this same survey several times in past years.

EXHIBIT "A"

Part I – Beach Profile Surveys

a) **Topographic & Hydrographic Survey:** Olin Hydrographic will perform a hydrographic survey of for each range stations between and including Dade County DNR Monument R-100 and R-113 including the half monuments. This will include a total of 27 Survey Profiles. A topographic survey of the beach will be performed on each of these stations along the recorded azimuth using RTK GPS. The offshore portion of the work will extend out 2000' from the monument and will contain at least 20' overlap with the RTK survey on each profile. A survey fathometer will be calibrated for site conditions and used to obtain water depths. Positioning of the survey vessel will be provided using Differential GPS (DGPS). Survey data will be logged, and navigation will be provided using Coastal Oceanographics' HYPACK software with an on-board laptop computer. Tidal Corrections will be managed by incorporating an RTK tides system during the hydrographic survey. Reference datum for the elevations will be NAVD 88.

Fees for Part Ia services are lump sum.....$14,250

b) **Basemap and DEP Reporting:** The hydrographic survey data will be post-processed and converted to a digital terrain map DTM of the subsurface topography for use in future volume calculations. The water depths will be aligned in an AutoCAD drawing with any electronic land survey or rectified aerial photograph supplied by the Client for the project. Client to provide any recent available rectified aerial photography. The data will be tabulated, and a survey report generated which conforms to the DEP Bureau of Beaches and Coastal Systems (BBCS) Statewide Coastal Monitoring Program, Regional Data Collection and Processing Plan, March 2001.

Fees for Part Ib services are lump sum.....$5,500

c) **Extent of Sea Grass Mapping:** OHS will work with the environmental biologist to map the extents of the seagrass for this project. After consultation with Gisele Colbert (Smart -Science) it is envisaged that 2 days will be required to complete this task. OHS staff will utilize a Trimble RTK-GPS to position the sea-grass extents as pointed out by the biologist and capture any associated attributes. The survey data will be reduced and supplied to the Biologist in a format that they are able to incorporate into their drawings and reports

Fees for Part Ic services are lump sum.....$3,700

GENERAL

Schedule: Part I services will commence within 2 weeks following our Authorization to Proceed from the Client.

Fees: This fee proposal is valid for 60 days. OHS will invoice the Client for Part I services on a lump sum. Invoices are to be paid within thirty (30) days of receipt of the invoice by the Client. Invoices not paid within thirty (30) days and not in dispute shall incur interest at a rate of 1.5 percent per month. The Client agrees to pay any cost of collection including reasonable attorney's fees incurred whether or not a suit is commenced, or an appeal is taken.

We look forward to working with you through the successful implementation of this project. Please return an executed copy of this agreement which will which will serve as our Authorization to Proceed. Should you have any questions regarding this proposal, please contact me at (305) 619 2800.

Sincerely,

OLIN HYDROGRAPHIC SOLUTIONS, INC.
David Olin, P.E.
President

SIGNED:_____ **DATE:**_____
Michael Adeife

EXHIBIT "A"

SMART-SCIENCES
Environmental Consulting

May 21, 2019

Michael Adeife, P.E.
EAC Consulting, Inc.
815 Northwest 57th Avenue, Suite 402
Miami, Florida 33126

Sent via e-mail to madeife@eacconsult.com

Subject: **Proposal for 2019 Post-Construction Biological Monitoring**
Village of Key Biscayne Beach Renourishment Project
FDEP Permit No. 0160846-017-JN
From FDEP Survey Control Monument R-102 to R-108, S. of R-110, N. of R-100
Village of Key Biscayne, Miami-Dade County, Florida
Smart-Sciences Proposal No. 028-023-P

Dear Mr. Adeife:

Smart-Sciences, Inc. (Smart-Sciences) is pleased to submit this proposal to EAC Consulting Inc. (EAC) for post-construction biological monitoring for the above referenced project. At the request of EAC, Smart-Sciences will conduct post-construction biological monitoring to delineate the western seagrass edge and evaluate the composition and density of the seagrass waterward of the project location along permanent transects. Completion of construction/sand placement was achieved between April and May, 2017. Post construction biological monitoring will be conducted annually for a total of three years. The first annual post-construction survey was performed by Smart-Sciences in July 2017, the second post-construction survey was performed by Smart-Sciences in November 2018, and subsequent post-construction surveys will be completed in preferably the month of July of 2019. The data collected during the proposed post-construction biological monitoring will be analyzed in comparison to the data collected during First Annual Post-Construction Biological Monitoring Survey (conducted by Smart-Sciences, July 2017) to document the ecological conditions post-construction, and to determine if unanticipated impacts to the seagrass community occurred due to the project construction activities or due to fill equilibration. The Florida Department of Environmental Protection (FDEP) has determined that the summer 2017 monitoring survey results will serve as the baseline dataset moving forward to assess potential impacts from the 2017 nourishment event and to assess any cumulative impacts that may result from other events authorized under this permit. Included in the proposal is an outline of the project information provided to us, the scope of services, our fee, the schedule, authorization procedures, and the terms and conditions governing the project.

EXHIBIT "A"

Background Information

The project location is within the Village of Key Biscayne between FDEP survey control monuments R-102 and R-108, approximately 5,425 feet (1,654 meters) of coastline, with control monitoring site located south of R-110, north of R-100. A Biological Monitoring Plan (BMP) was prepared in support of the Village of Key Biscayne's shore protection project in Miami-Dade County, Florida. The goals of the BMP include delineating the western edge of the nearshore seagrass community offshore of the project area and

estimating percent cover and species composition of seagrasses along perpendicular permanent transects within the project area.

The Miami-Dade County Regulatory and Economic Resources (RER), FDEP, and United States Army Corp of Engineers (USACE) permits require biological monitoring in accordance with the approved project specific BMP. The purpose of the monitoring is to identify unanticipated adverse impacts to submerged aquatic resources that result from construction and/or equilibration of the 2017 beach renourishment project.

The following tasks provide for the post-construction monitoring required in accordance with the BMP, which includes monitoring within the immediate area of the project influence, as well as monitoring control areas to document background conditions. FDEP has requested that data collected from the control transects be reported separately from the permit-required survey data that will be collected within the Project area.

Proposed Scope of Services

Task 1 – Biological Monitoring Plan Update and Biological Monitoring Survey

Smart-Sciences will conduct a biological monitoring survey to delineate the approximate western extent of seagrass and a qualitative survey for seagrass in accordance with the BMP for Village of Key Biscayne Beach Nourishment Project revised May 15, 2018. Smart-Sciences worked with Moffatt & Nichols and all three regulatory agencies to update the BMP to provide consistent data that could be statistically analyzed. The survey limits are from FDEP survey control monuments R-102 through R-108 with control areas south of R-110 and north of R-100. This effort will follow the methodology for marine benthic surveying based on the National Marine Fisheries Service (NMFS) Recommendations for Sampling *Halophila johnsonii* at a Project Site (NMFS, 2002), using the "large area" protocol and consistent with past survey methods using the Braun Blanquet technique.

The western seagrass edge mapping will occur adjacent to the renourishment area between FDEP survey control monuments R-102 and R-108. Approximately 5,425 feet (1,654 meters) of shoreline will be surveyed to locate the western extent of the submerged aquatic vegetation (SAV). The western edge will be delineated by Smart-Sciences staff and recorded by others using Differential Global Positioning System (DGPS) for analysis and mapping purposes. This effort is anticipated to take two qualified staff biologists two days to complete. Coordination with the survey crew, provided by EAC, will occur prior to fieldwork.

The qualitative seagrass community survey will occur within the same survey limits with the addition of six control transects, three located south of FDEP survey control monument R-110 and three located north of survey control monument R-100. Within the renourishment area, 25 transects will be established along the western seagrass edge identified above, spaced approximate 200 feet (60 meters) apart. Each transect

EXHIBIT "A"

will extend east 115 feet (35 meters), visually perpendicular to the shoreline. The beginning of each transect will be located using a handheld Global Positioning System (GPS) by Smart-Sciences and will correspond with the start of transect locations identified during the pre-construction survey and first annual post-construction survey. Staff will document the seagrass species and estimate the density of seagrasses using the Braun Blanquet technique along each transect. A one-square meter ($1m^2$) quadrat will be placed on the substrate every five meters along the north side of the transect tape and seagrass density information will be collected. Eight Braun Blanquet sampling stations will be monitored along each transect for a total of 200 qualitative measurements within the project area. If the seagrass area is a mixed bed, dominant seagrass species and other seagrass species occurring within the seagrass bed will be noted. The density estimate will be for the total seagrass coverage, not for each species separately. The biologists will also note the dominate species of attached macroalgae present within the seagrass bed, substrate composition, and take representative photographs of the survey area. Results will include calculations of density (average cover including zeros), abundance (average cover excluding zeros), and frequency of occurrence (percentage of quadrats containing seagrass) for each transect and also for the Project as a whole.

A control group composed of six additional seagrass community monitoring transects will be established approximately 2,000 feet (610 meters) south and north of the project area within Bill Baggs Cape Florida State Park and Crandon Park, respectively. Additional seagrass western edge mapping will be conducted in the control area as well. These six transects and the additional seagrass edge mapping area will be monitored using the same methods described above, resulting in a total of 48 qualitative measurements within the control areas. This information will serve as control data and will be used to distinguish natural sand displacement and natural changes in the seagrass community. The control location was selected because it closely resembles the conditions of the seagrass community within the project area, but is far enough away from the project area to not be directly influenced by transport of the beach fill material.

The qualitative seagrass community survey is anticipated to take two qualified staff biologists four days to complete. Snorkeling and SCUBA will be utilized for all transects and shoreline delineation. Tidal conditions may influence the pace and rate of speed at which the effort can be accomplished. Should adverse conditions be encountered, additional time may be required. This would be necessary if extreme tides, Village events, marine/pedestrian traffic, and/or poor visibility are encountered, which would make surveying this area dangerous and pose a safety risk for staff. Additional time required to survey these areas will incur additional fees, subject to your approval.

This task also includes coordination, mobilization activities for field surveys, and safety briefings.

Task 2 – Biological Monitoring Survey Report

Smart-Sciences will prepare a comprehensive Post-Construction Biological Monitoring Survey Report to document results of the western seagrass edge mapping and qualitative survey conducted in **Task 1**. The

EXHIBIT "A"

report will provide a summary of the results of the biological monitoring survey along with identifying any adverse impacts attributable to the project. The reports will analyze and discuss observed burial or community changes within the seagrass community based upon the data collected and observations made with comparison to control data. A statistical analysis will be prepared comparing Braun Blanquet data between the July 2017 post-construction monitoring to the 2019 Post-Construction Biological Monitoring Survey (proposed July 2019). The reports will include a comparison of the 2017 post-construction observations with 2019 post-construction observations and a discussion of the findings. If any impacts are identified, the report will include an estimate of the area of impact. A Geographic Information Systems (GIS) base map will be prepared comparing the western edge of seagrass mapped prior to commencement of construction to the western edge of seagrass mapped post-construction. Additional maps depicting the density and species distribution along the transects (25 in project area + six control) based upon the Braun Blanquet data, will also be prepared.

Per the BMP, the reports need to be submitted to FDEP, USACE and RER within 90 days after the completion of the field survey. Reports need to be presented in hardcopy and electronic format. In addition, all collected raw data (Excel, field data sheets in PDF, etc.) will need to be provided to FDEP, USACE, and RER electronically so that it can be used for processing. The electronic file will also include the Excel and raw field data sheets in PDF.

Task 3 – Conference Calls/Meetings/Project Coordination

Anticipated activities include the following:

- Conference call with project team: EAC, Moffatt & Nichol, etc.
- Coordination/Conference Calls with FDEP, DERM, USACE and the Village of Key Biscayne.
- In-person meetings with project team.

Assumptions

- Beach maintenance access will be provided.
- The fees are inclusive of equipment and reimbursable expenses.
- GPS data will be collected using Florida State Plane East (US Feet) projection and datum of NAD 83.
- GPS collected data will have a minimum accuracy of ten (10) feet when differentially corrected.
- If necessary, EAC will request a variance to conduct the surveys outside of the June 1 and September 30 USACE guidelines.
- Changes to the scope may incur additional fees.

EXHIBIT "A"

Cost of Services

Smart-Sciences proposes to perform the above scope of services for the following fee estimates:

Task Description	Cost Estimate
Task 1 – Updating Biological Monitoring Plan and Biological Monitoring Survey	$18,500 (lump sum)
Task 2 – Biological Monitoring Survey Report	$15,000 (lump sum)
Task 3 – Conference Calls/Meetings with Agencies and Team	$1,200 (hourly)

If unforeseen conditions should require services beyond the scope of services described herein, Smart-Sciences will notify you immediately of additional costs necessary to complete the project, prior to proceeding. Services beyond those described herein will be invoiced in accordance with our standard schedule of fees at the applicable rates. Please note that payment of invoices is due upon receipt.

Schedule

Smart-Sciences will make accommodations to initiate fieldwork once notified to proceed. If provided notice to proceed by the end of June 2019, our plan is to conduct field work in July 2019. Smart-Sciences will provide the Biological Monitoring Survey Report (**Task 2**) within 90 days after concluding the field portion of the survey (**Task 1**). Smart-Sciences will continue to coordinate closely with EAC throughout the duration of the project.

Authorization

If the above services and fees are acceptable, please provide us with a services agreement and notice to proceed.

We appreciate the opportunity to offer our professional services on this project. If you have any questions concerning this proposal, please contact us at 786-313-3977.

Sincerely,
SMART-SCIENCES, INC

Gisele Colbert
Principal Scientist

EXHIBIT "A"